AMENDMENTS TO THE CLAIMS

The following is a complete listing of the claims, which replaces all previous versions and listings of the claims.

1. (previously presented) A welding implement, comprising:

a torch head configured to conduct electricity to a welding electrode disposed therein; and

a thermal storage member adapted to absorb heat from the torch head;

a first electrical insulator disposed along an interior of the thermal storage member; and

a second electrical insulator disposed completely around an exterior of the thermal storage member.

2. (original) The welding implement as recited in claim 1, wherein the thermal storage member comprises metal.

3. (original) The welding implement as recited in claim 1, wherein the thermal storage member comprises aluminum.

4. (original) The welding implement as recited in claim 1, comprising an electrically conductive tube operable to conduct electricity and gas to the torch head and heat from the torch head to the thermal storage member, wherein the thermal storage member is disposed around at least a portion of the tube.

5. (previously presented) The welding implement as recited in claim 4, wherein the first electrical insulator is disposed between the electrically conductive tube and the thermal storage member, wherein heat is conducted from the electrically conductive tube to the thermal storage member through the first electrical insulator.

6. (previously presented) The welding implement as recited in claim 5, wherein the first electrical insulator is adapted to position the thermal storage member axially along the tube.

7. (previously presented) The welding implement as recited in claim 4, wherein the electrically conductive tube comprises a first conductive metal and the thermal storage member comprises a second conductive metal.

8. (original) The welding implement as recited in claim 1, wherein the torch head is air-cooled and operable to conduct 300 Amps at a 60 % duty cycle with a temperature increase of less than 30 K.

9. (previously presented) The welding implement as recited in claim 4, comprising a second tube disposed around a portion of the electrically conductive tube located proximate to the torch head.

10. (cancelled)

11. (withdrawn) A welding implement, comprising:

a tube operable to conduct electricity to a torch head and to conduct heat from the torch head;

a metal member disposed in a thermally conductive relationship with the tube, wherein the metal member is configured to absorb heat from the torch head;

an electrical insulator disposed between the tube and the metal member; and

an insulating material disposed entirely over the tube and metal member.

12-13. (cancelled)

14. (withdrawn) The welding implement as recited in claim 11, wherein the metal member is disposed around at least a portion of the tube.

15. (withdrawn) The welding implement as recited in claim 11, wherein the electrical insulator is adapted to limit axial movement of the metal member relative to the tube.

16. (withdrawn) The welding implement as recited in claim 11, comprising a first connector coupled to the tube and coupleable to a second connector coupled to a gas hose and a power cable.

17. (withdrawn) The welding implement as recited in claim 11, comprising the torch head.

18. (cancelled)

19. (withdrawn) The welding implement as recited in claim 11, wherein the insulating material includes a plurality of ridges adapted to produce friction with a handle disposed over the plurality of ridges.

20-25. (cancelled)

26. (withdrawn) A welding implement, comprising:
means for storing heat generated from a torch head in the welding implement;
means for electrically insulating an exterior of the means for storing heat; and
means for electrically insulating an interior of the means for storing heat.

27. (withdrawn) A welding implement, comprising:
a torch head;

a first tubular member having a passage therethough to couple gas to the torch head;

a second tubular member disposed over the first tubular member, wherein the second tubular member is configured to absorb heat from the first tubular member;

a third tubular member disposed between the first and second tubular members, wherein the third tubular member comprises an electrical insulator; and

an insulating material disposed about an exterior of the third tubular member.

28. (withdrawn) The welding implement as recited in claim 27, wherein the first and second tubular members comprise copper.

29. (withdrawn) A TIG welding system, comprising:

a power source; and

an air-cooled TIG welding torch electrically coupleable to the power source, comprising:

a torch head adapted to conduct electricity to an electrode disposed therein;

a thermal storage member electrically isolated from the torch head;

a first electrical insulator disposed over the torch head and concentrically about the thermal storage member; and

a second electrical insulator disposed concentrically inside the thermal storage member.

30. (withdrawn) The TIG welding system as recited in claim 29, comprising a conductive tube adapted to couple electricity and gas to the torch head, wherein the second electrical insulator is disposed between the conductive tube and the thermal storage member.

31. (withdrawn) The TIG welding system as recited in claim 29, wherein the air-cooled TIG welding torch is operable to conduct 300 Amps at a 60 % duty cycle with a temperature increase of less than 30 K.

32. (withdrawn) The TIG welding system as recited in claim 29, wherein the air-cooled TIG welding torch is operable to conduct 300 Amps at a 60 % duty cycle with a temperature increase of less than or equal to 27 °F.

33. (previously presented) A welding implement, comprising:

a torch head including a collet assembly configured to support an electrode;

a conductor extending from the torch head and operable to electrically couple the torch head to a power source to route electrical current to the electrode;

a metallic member disposed about the conductor and electrically isolated from the conductor and the torch head, wherein the metallic member is configured to absorb heat from the conductor;

a first dielectric material disposed between the metallic member and conductor; and

a second dielectric material disposed about the torch head, the metallic member, and the conductor, wherein the second dielectric material extends along the entire length of the metallic member.

34-36. (cancelled)

37. (previously presented) The welding implement as recited in claim 33, wherein the torch head is air-cooled and operable to conduct 300 Amps at a 60% duty cycle with a temperature increase of less than 30K.

38. (previously presented) The welding implement as recited in claim 1, wherein the thermal storage member is configured to cool the torch head in response to a duty cycle of the welding implement by absorbing heat from the torch head while the torch head is conducting electricity and subsequently returning heat to the welding implement

while the torch head is not conducting electricity during operation of the welding implement.

39. (previously presented) The welding implement as recited in claim 38, wherein the welding implement is adapted to dissipate heat returned from the thermal storage member.

40-41. (cancelled)

42. (previously presented) The welding implement as recited in claim 33, wherein the metallic member is configured to cool the torch head in response to a duty cycle of the welding implement by absorbing heat from the conductor while the conductor is conducting electricity and subsequently returning heat to the conductor while the conductor is not conducting electricity during operation of the welding implement.

43. (previously presented) The welding implement as recited in claim 42, wherein the conductor is adapted to dissipate heat returned from the metallic member when the conductor is not conducting electricity.

44. (cancelled)

45. (previously presented) A welding implement, comprising:

a torch head;

a conductor extending from the torch head, wherein the conductor is configured to enable passage of a gas;

a thermal storage member disposed proximate the conductor and configured to absorb heat from the conductor; and

a protective cover substantially enveloping the thermal storage member, wherein the protective cover comprises a first electrical insulator; and

a second electrical insulator disposed between the thermal storage member and the conductor.

46. (previously presented) The welding implement as recited in claim 45, wherein the thermal storage member is configured to cool the torch head in response to a duty cycle of the welding implement by absorbing heat from the conductor while the conductor is conducting electricity and subsequently returning heat to the conductor while the conductor is not conducting electricity during operation of the welding implement.

47. (previously presented) The welding implement as recited in claim 11, wherein the metal member is configured to cool the welding implement in response to a duty cycle of the welding implement by absorbing heat from the tube while the tube is conducting electricity and subsequently returning heat to the tube while the tube is not conducting electricity during operation of the welding implement.

48. (previously presented) The welding implement as recited in claim 26, wherein the means for storing heat is configured for cooling the torch head in response to a duty cycle of the welding implement by absorbing heat from the torch head while the torch head is conducting electricity and subsequently returning heat to the welding implement while the torch head is not conducting electricity during operation of the welding implement.

49. (previously presented) The welding implement as recited in claim 27, wherein the second tubular member is configured to cool the torch head in response to a duty cycle of the welding implement by absorbing heat from the torch head while the torch head is conducting electricity and subsequently returning heat to the welding implement while the torch head is not conducting electricity during operation of the welding implement.

50. (previously presented) The TIG welding system as recited in claim 29, wherein the thermal storage member is configured to cool the torch head in response to a duty cycle of the air-cooled TIG welding torch by absorbing heat from the torch head while the torch head is conducting electricity and subsequently returning heat to the air-cooled TIG welding torch while the torch head is not conducting electricity during operation of the air-cooled TIG welding torch.

51. (currently amended) A welding implement, comprising:

a torch head configured to conduct electricity according to a duty cycle; and

a thermal storage member configured to take advantage of the duty cycle to cool the torch head during operation of the welding implement, wherein the thermal storage member is configured to store heat transferred from the torch head to the thermal storage member during an on state of the duty cycle, and the thermal storage member is configured to release heat stored during the on state back to the welding implement for heat dissipation during an off state of the duty cycle; and

an electrical insulator that electrically isolates the thermal storage member from the torch head.

52. (cancelled)

53. (previously presented) The welding implement as recited in claim 51, comprising an insulating material disposed completely about an outer perimeter of the thermal storage member.

54. (currently amended) The welding implement as recited in claim 51, comprising a first tubular structure comprising ~~an~~ the electrical insulator, a second tubular structure comprising the thermal storage member disposed concentrically about the first tubular structure, and an insulating material disposed completely about the second tubular structure.

55. (previously presented) The welding implement as recited in claim 54, comprising a third tubular structure disposed concentrically inside the first tubular structure, wherein the third tubular structure is configured to conduct electricity according to the duty cycle and to pass a gas to the torch head.

56. (currently amended) A welding implement, comprising:

a torch head configured to conduct electricity to a welding electrode according to a duty cycle;

a conductor leading to the torch head, wherein the conductor is configured to conduct electricity to the torch head according to the duty cycle;

a heat dam disposed adjacent the torch head, wherein the heat dam is configured to absorb heat from the torch head and to transfer the heat to the conductor; and

a thermal storage member disposed adjacent the conductor, wherein the thermal storage member is configured to take advantage of the duty cycle to cool the torch head during operation of the welding implement, the thermal storage member is configured to store heat transferred from the torch head to the thermal storage member via the conductor during an on state of the duty cycle, and the thermal storage member is configured to release heat stored during the on state back to the conductor for heat dissipation during an off state of the duty cycle; and

an insulating material disposed completely about an outer perimeter of the heat dam and the thermal storage member.

57. (previously presented) The welding implement as recited in claim 56, comprising an electrical insulator that electrically isolates the thermal storage member from the torch head and the conductor.

58. (cancelled)